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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KUMAR, PANKAJ

ART UNIT	PAPER NUMBER
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2631

16

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/318,445

Applicant(s)

MIYOSHI ET AL.

Examiner

Pankaj Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33-38 and 61 is/are allowed.
- 6) ☒ Claim(s) 39-60, 63-71 is/are rejected.
- 7) ☒ Claim(s) 62 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 13.14.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

1. DETAILED ACTION

2. *Response to Arguments*

3. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

4. *Response to Amendment*

5. *Specification*

6. The disclosure is objected to because of the following informalities: Spec page 2 line 6 – discrete is misspelled. It should be discrete. Appropriate correction is required.

7. *Claim Objections*

8. Claims 40, 43-46, 62, 63 are objected to because of the following informalities:

9. Claim 40: ONT is not defined. The office is assuming it is misspelled and should be DMT.

10. Claims 43-46: TCM has not been defined in the claim at least once as time compression modulation

11. Claim 62: recites that S equals a formula but the meaning of S is not defined.

12. Claim 63: QAN has not been defined. Assuming it is misspelled and it should be QAM.

13. *Claim Rejections - 35 USC § 112*

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

15. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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16. Claims 39, 40, 43, 44, 45, 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

17. Claims 39 and 40 recite the limitation "the S/N measurement" and "the S/N". There is insufficient antecedent basis for this limitation in the claim.

18. Claim 43 recites the limitation "the fourth sync symbol". There is insufficient antecedent basis for this limitation in the claim.

19. Claim 44 recites the limitation "the first sync symbol". There is insufficient antecedent basis for this limitation in the claim.

20. Claim 45 recites the limitation "the fourth sync symbol". There is insufficient antecedent basis for this limitation in the claim.

21. Claim 46 recites the limitation "the first sync symbol". There is insufficient antecedent basis for this limitation in the claim.

22. Claims 43-46 recite the limitation "the TCM". There is insufficient antecedent basis for this limitation in the claim.

23. Appropriate correction is required.

24. Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

26. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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27. Claims 39, 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helms 6144695 in view of Takatori 6229855.

28. (Helms, Takatori) As per claim 39, Helms teaches conducting the S/N measurement in which, during training for communication (not in Helms but would be obvious as explained below), DMT symbols (Helms: abstract) not completely received inside of a near end cross talk (NEXT) duration or a far end cross talk (FEXT) duration at a receiving side are not used to measure the S/N (Helms figs. 5, 6: 184 samples before and after the 2048 samples are not used in a sample), DMT symbols received inside of the NEXT duration are used to measure the NEXT duration S/N, and DMT symbols received inside of the FEXT duration are used to measure the FEXT duration S/N (Helms figs. 5, 6: 2048 samples are sampled). What Helms does not teach is measuring S/N during training for communication. What Takatori teaches is measuring S/N (Takatori figs. 3, 4: 66) during training for communication (Takatori: title has "adaptive"). It would have been obvious to one skilled in the art at the time of the invention to modify Helms to teach S/N measurement during training for communication in Takatori. One would be motivated to do so to determine if S/N is sufficiently high in order to continue communication.

29. (Helms, Takatori) As per claim 41, Helms in view of Takatori teaches an XDSL apparatus (Helms col. 1: ADSL is a type of XDSL; Bell teaches same thing in col. 1 lines 44-46) comprising a measuring means for conducting the S/N measurement in which, during training for communication, DMT symbols not completely received inside of a near end cross talk (NEXT) duration or a far end cross talk (FEXT) duration at a receiving side are not used to measure the S/N, DMT symbols received inside of the NEXT duration are used to measure the NEXT

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duration S/N, and DMT symbols received inside of the FEXT duration are used to measure the FEXT duration S/N (remainder discussed above in claim 39).

30. Claims 40, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helms 6144695 in view of Takatori 6229855 in view of Bell 5982784.

31. (Helms, Takatori, Bell) As per claim 40, Helms in view of Takatori teaches conducting the S/N measurement in which, during training for communication, DMT symbols not completely received inside of a near end cross talk (NEXT) duration or a far end cross talk (FEXT) duration at a receiving side are not used to measure the S/N, DMT symbols received inside of the NEXT duration are used to measure the NEXT duration S/N, and DMT symbols received inside of the FEXT duration are used to measure the FEXT duration S/N (discussed in claim 39 up to here); and determining the number of bits to be transmitted in accordance with the measured S/N (not in Helms or Takatori but would be obvious). Helms in view of Takatori does not teach determining the number of bits to be transmitted in accordance with the measured S/N, Bell 5982784 teaches determining the number of bits to be transmitted in accordance with the measured S/N (Bell paragraph 18 col. 7 lines 44-45: "The service provider assigns 208 a number of bits, based on the SNR, to be transmitted in bandwidth segment n.") It would have been obvious to one skilled in the art at the time of the invention to modify Helms in view of Takatori to teach the cited teaching of Bell. One would be motivated to do so in order to be efficient in transmitting bits.

32. (Helms, Takatori, Bell) As per claim 42, teaches a measuring means for conducting an S/N measurement in which, during training for communication, DMT symbols not completely

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received inside of a near end cross talk (NEXT) duration or a far end cross talk (FEXT) duration at a receiving side are not used to measure the S/N, DMT symbols received inside of the NEXT duration are used to measure the NEXT duration S/N, and DMT symbols received inside of the FEXT duration are used to measure the FEXT duration S/N; and determining the number of bits to be transmitted in accordance with the measured S/N (discussed above with respect to claim 40).

33. Claims 43, 44, 45, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stephenson 5966373.

34. As per claim 43 (preamble is not afforded patentable weight), Stephenson 5966373 teaches five superframes (Stephenson teaches 6 in fig. 2 and n in claim 11 instead of 5 but would be obvious as explained below) form one unit whose duration is made to coincide with an integer multiple of the time duration (2.5ms) (Stephenson col. 8 lines 31-34 teaches 16ms frame and thus one frame unit coincides with an integer multiple of time duration. Stephenson does not teach 2.5ms but it would be obvious as explained below.) of the TCM of 400Hz (Stephenson teaches modulation but not TCM at 400Hz but it would be obvious as explained below.) and the fourth sync symbol is transmitted as an inverted sync symbol, to the FEXT duration of a receiver side in order to transmit the boundary of the five super frames (Stephenson claim 11. Stephenson does not teach 4th sync pulse but it would be obvious as explained below). Stephenson does not teach 4th sync pulse, 5 superframes, 2.5ms, 400Hz, TCM, FEXT. It would have been obvious to one skilled in the art at the time of the invention to modify Stephenson to teach these limitations

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since numbers, the type of modulation, and transmitting during FEXT duration are a matter of design choice.

35. As per claim 44 (preamble is not afforded patentable weight), teaches five superframes form one unit whose duration is made to coincide with an integer multiple of the time duration (2.5ms) of the TCM of 400Hz and the first sync symbol is transmitted as an inverted sync symbol, to the FEXT duration of a central office in order to inform the central office of the boundary of the five super frames. (discussed above with respect to claim 43)

36. As per claim 45 (preamble is not afforded patentable weight), teaches five superframes form one unit whose duration is made to coincide with an integer multiple of the time duration (2.5ms) of the TCM of 400Hz and the fourth sync symbol is transmitted as an inverted sync symbol, to the FEXT duration of a receiver side in order to transmit the boundary of the five super frames. (discussed above with respect to claim 43)

37. As per claim 46 (preamble is not afforded patentable weight), teaches five superframes form one unit whose duration is made to coincide with an integer multiple of the time duration (2.5ms) of the TCM of 400Hz and the first sync symbol is transmitted as an inverted sync symbol, to the FEXT duration of a central office in order to inform the central office of the boundary of the five super frames. (discussed above with respect to claim 43)

38. Claims 47-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guan 5440347.

39. As per claim 47 (preamble is not afforded patentable weight), Guan 5440347 teaches during training for starting data communication, a signal for representing a switching of the

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training sequence is transmitted to a central office in accordance with a timing when a receiving side can receive the switching signal (Guan col. 4 lines 9 to 14) during a FEXT duration. Guan does not teach FEXT duration. It would have been obvious to one skilled in the art at the time of the invention to modify Guan to teach FEXT duration since that is a matter of design choice.

40. As per claim 48 (preamble is not afforded patentable weight), teaches during training for starting data communication, a signal for representing a switching of the training sequence is transmitted to a central office in accordance with a timing when a receiving side can receive the head of the switching signal during a FEXT duration. (discussed above with respect to claim 47)

41. As per claims 49-52, the same reasoning as in claims 47 and 48 apply.

42. Claims 53-60, 63-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helms.

43. As per claims 53-60, preamble is not afforded patentable weight and Helms teaches multitone includes pilot tones and the tones can occur inside and outside of the NEXT and FEXT durations. The following is the first paragraph of detailed description of Helms describing pilot tones occurring in multitone: "The basis for central office or subscriber modem design according to the present invention is the Discrete Multitone (DMT) modem standardized in ANSI Standard T1.413-1995 for an Asymmetric Digital Subscriber Line (ADSL). The terms used herein conform to their usage in the T1.413-1995 standard document. Frame and superframe are defined by Sect. 6.2.1.1; pilot frequency is defined in Sect. 6.9.1.2;" Figures 5 and 6 in Helms teach samples are received inside and outside of a time duration relative to NEXT and FEXT durations.

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44. As per claims 63-71, preamble is not afforded patentable weight and Helms teach orthogonality (Helms cols. 9, 10), QAM (Helms paragraph 11). It is inherent in QAM for the sample points to be 90 degrees out of phase with each other. It is also inherent in QAM to have 2 kinds of signal points (I,Q) and 4-value QAM (2 I values and 2 Q values). What Helms does not teach is 400Hz. It would have been obvious to one skilled in the art at the time of the invention to modify Helms to teach 400 Hz since picking a specific frequency value is a matter of design choice.

45. Allowable Subject Matter

46. Claims 33-38, 61 are allowed.

47. Claim 62 is objected to as being objected to but would be allowable if rewritten.

48. The following is a statement of reasons for the indication of allowable subject matter:

49. The art of record does not suggest the respective claim combinations together and nor would the respective claim combinations be obvious with:

50. As per claim 61, all of the portion of claim 61 on page 17 – the two if statements

51. As per claim 62, it would be allowable based on the formula

52. As per claims 33-38, see a prior action for details.

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53. Conclusion

54. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on Mon, Tues, Wed and Thurs after 8AM to after 6:30PM.

55. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (703) 306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

56. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

57.

58.

59. PK

TEMESGHEN GHEBRETISSAE
PRIMARY EXAMINER